Global Extratropical Surge & Tide Operational Forecast System (G-ESTOFS)

Summary

The new implementation replaces 3 existing basin-scale ESTOFS implementations (ESTOFS-Atlantic, ESTOFS-Pacific, and ESTOFS-Micronesia) with one global domain (Figure 1).

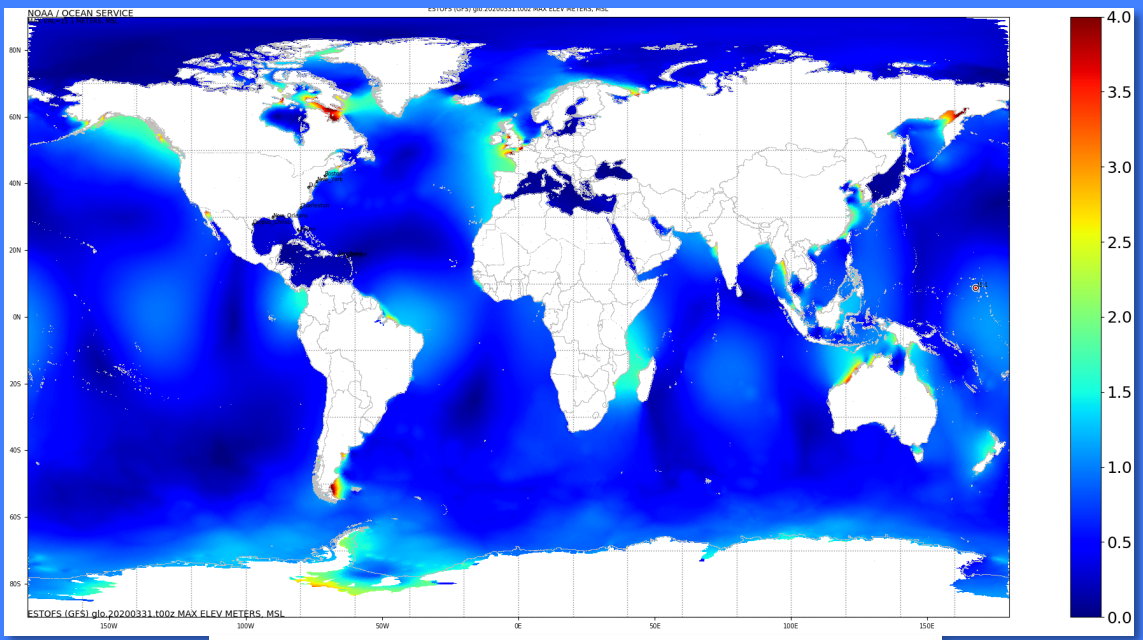

Figure 1: Maximal water levels forecasted over a period of 3/31-4/6/2020 from the experimental configuration of the Global ESTOFS.

Tentative Configuration

- 2D, depth-integrated ADCIRC (version 55)
- Spherical coordinates on an unstructured global mesh
    - Resolution ranges from 120m along US coasts to 40 km in open ocean.
    - Inland inundation coverage up to 20 m above MSL in some US areas
- Internal tides, self attraction and loading
- Deterministic GFS-FV3 13km forcing for mean sea level atmospheric pressure, 10 meter winds, sea ice cover
- Observed coastal water level anomalies are assimilated to reduce linear bias

Validation

Current configuration, testing and validation available online:
https://polar.ncep.noaa.gov/estofs/glo.htm

Contact Info

Sergey Vinogradov:
Sergey.Vinogradov@noaa.gov